**NEW CLAIMS**

1.    An air supply control method for a turbocharged
      engine having an intake manifold (20) downstream
5     of the compressor of the turbocharger (14) and an
      exhaust manifold (22) upstream of the turbine of
      the turbocharger (14), in which the mass air flow
      supplied to the engine and/or the pressure in the
      intake manifold (20) are determined, together with
10    the temperature in the exhaust manifold,
      characterized in that the pressure in the exhaust
      manifold (22) is determined as a function of the
      pressure in the intake manifold (20), the engine
      speed, and the temperatures in the cylinders (4)
15    and in the exhaust manifold (22).

2.    The control method as claimed in claim 1,
      characterized in that a correction factor
      dependent on the ambient surrounding pressure is
20    provided.

3.    The control method as claimed in claim 2,
      characterized in that the pressure in the exhaust
      manifold (22) $P_{exh}$ is calculated by a formula of
25    the type:
      $P_{exh} = [A(T_c)*MAP - B(N, AMP, T_{exh})]/C(T_{exh})$,
      where A, B and C are predetermined functions, $T_c$ is
      the temperature in the cylinders, MAP is the
      pressure in the intake manifold, N is the engine
30    speed, AMP is the ambient pressure and $T_{exh}$ is the
      temperature of the burnt gases in the exhaust
      manifold.

4.    The control method as claimed in one of claims 1
35    to 3, characterized in that the air flow supplied
      to the engine is regulated by means of a throttle
      valve (18), and in that, when this throttle valve
      (18) is near its closed position within

predetermined limits during a specified time interval, the ambient external pressure AMP is calculated on the basis of the exhaust pressure as a function of the engine speed.

5.   An air supply control method for a turbocharged engine having an intake manifold (20) downstream of thecompressor of the turbocharger (14) and an exhaust manifold (22) upstream of the turbine of the turbocharger (14), in which the mass air flow supplied to the engine and/or the pressure in the intake manifold (20) are determined, together with the temperature in the exhaust manifold (22), characterized in that the pressure in the exhaust manifold (22) is measured by means of a sensor or the like, and in that the pressure in the intake manifold (20) is determined on the basis of the exhaust pressure

measured as a function of the engine speed and the temperatures in the cylinders (4) and in the exhaust manifold (22).

5   6.   The control method as claimed in claim 5, characterized in that a correction factor dependent on the ambient surrounding pressure is provided.

10   7.   The control method as claimed in claim 6, characterized in that the pressure in the intake manifold MAP is calculated by a formula of the type:
$$MAP = [F(N, T_{exh}) * P_{exh} + G(N, AMP, T_{exh})] / [H(N, T_c)],$$
15   where F, G and H are predetermined functions, $T_c$ is the temperature in the cylinders, $P_{exh}$ is the pressure in the exhaust manifold, N is the engine speed, AMP is the ambient pressure and $T_{exh}$ is the temperature of the burnt gases in the exhaust
20   manifold.

8.   A control method as claimed in one of claims 1 to 7, characterized in that the temperature in the exhaust manifold (22) is determined on the basis
25   of modeling.

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